PATENT ABSTRACTS OF JAPAN

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(21)Application number : 2000-163151 (71)Applicant : NIDEC COPAL CORP

(22)Date of filing : 29.05.2000 (72)Inventor : SEKI HIROBUMI

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(54) FLEXIBLE PRINTED WIRING BOARD PROVIDED WITH ELECTRONIC COMPONENT WITH LEAD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a flexible printed wiring board provided with an electronic component with leads which is so installed as to be kept in a specified position without using an adhesive or special member.

SOLUTION: The flexible printed wiring board 1 is formed with two belt-like parts 1a, 1b which have copper foil sections 1c, 1d formed when forming a circuit pattern. The electronic component 2 with leads has two leads 2a, 2b soldered to lands 1e, If of the circuit pattern and has a main body 2c held between the two belt-like parts 1a, 1b. When soldering the electronic component 2 with leads to the flexible printed wiring board 1, the work is done with the main body part 2c being held in advance between the two belt-like parts 1a, 1b.

CLAIMS

[Claim(s)]
[Claim 1]Form two strip parts which pierced some flexible printed wiring boards and have been arranged to abbreviated parallel in an adjacent position, and electronic parts with a lead, A flexible printed wiring board provided with electronic parts with a lead, wherein the lead is soldered to said flexible printed wiring board in one position of the length direction of said two strip parts, and a direction which abbreviated-intersects perpendicularly and a body part is held between said two strip parts.
[Claim 2]A flexible printed wiring board provided with the electronic parts with a lead according to claim 1, wherein width is widely formed from a strip part of a direction which has a strip part of a direction which is in a position far from said lead among said two strip parts in a near position.
[Claim 3]A flexible printed wiring board provided with the electronic parts with a lead according to claim 1 or 2, wherein at least one side of said two strip parts is cut by a position of the length direction and one or the two free end are formed.
[Claim 4]A flexible printed wiring board provided with the electronic parts with a lead according to any one of claims 1 to 3, wherein at least one side of said two strip parts has a trunk foil in accordance with the length direction.
[Claim 5]From a plate surface of a flexible printed wiring board, a part which forms a window part is bendable and electronic parts with a lead, A flexible printed wiring board provided with electronic parts with a lead having soldered a lead which makes said part a bent condition and is bent by said window part in a body part at through and an abbreviated right angle to said flexible printed wiring board.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the flexible printed wiring board furnished with electronic parts with a lead, such as a crystal oscillator.

[0002]

[Description of the Prior Art]When soldering electronic parts to a flexible printed wiring board and the electronic parts are chips, Since the body part of the electronic parts will be in the state where it carried out approximately close to the flexible printed wiring board, do not produce a problem in particular, but in being electronic parts with a lead, Only by soldering the lead to a flexible printed wiring board, Since the state where the body part was close to the flexible printed wiring board cannot be maintained, if after soldering is not dealt with carefully, the mounting posture over a flexible printed wiring board may change, or a lead may be damaged. Then, after soldering a lead, he was trying to paste up a body part on a flexible printed wiring board with adhesives from the former, in order to keep such a situation from arising. Enabling it to maintain a predetermined mounting posture by other members is also thought of as shown in Drawing 1 of JP,4-32778,Y.

[0003]

[Problem(s) to be Solved by the Invention]However, when pasting up the body part of electronic parts with a lead on a flexible printed wiring board with adhesives, There is if a body part must be positioned, it is necessary to attach adhesives each time, and it must not necessarily be able to say that it is advantageous on a man day and quantity of adhesives must be made regularity, a problem that it must be made for adhesives not to have to flow until adhesives harden thoroughly. When adopting what is indicated in Drawing 1 of the above-mentioned gazette, it will become very [in cost] disadvantageous from a separate member being prepared or the member being soldered to a flexible printed wiring board.

[0004]this invention is made in order to solve such a problem, and it comes out. The purpose is to provide the flexible printed wiring board which attached it as holds and acquired the predetermined posture, without using adhesives for ********** or preparing a special member.

[0005]

[Means for Solving the Problem]In order to attain the above-mentioned purpose, this invention forms two strip parts which pierced some flexible printed wiring boards and have been arranged to abbreviated parallel in an adjacent position, and electronic parts with a lead, The lead is soldered to said flexible printed wiring board in one position of the length direction of said two strip parts, and a direction which abbreviated-intersects perpendicularly, and a body part is held between said two strip parts.

[0006]In that case, if width is widely formed from a strip part of a direction which has a strip part of a direction which is in a position far from said lead among said two strip parts in a near position, it will become possible to make the wide strip part into a circuit pattern formation part.

[0007]If at least one side of said two strip parts is cut by a position of the length direction and one or the two free end are formed, attachment of a body part of electronic parts with a lead will become easy.

[0008]If it is made for at least one side of said two strip parts to have a trunk foil in accordance with the length direction, a body part of electronic parts with a lead will come to be firmly held between two strip parts.

[0009]In order to attain the above-mentioned purpose, this invention, From a plate surface of a flexible printed wiring board, unlike each of above-mentioned composition, a part which forms a window part is bendable, and electronic parts with a lead, It may be made to have soldered a lead which makes said part a bent condition and is bent by said window part in a body part at through and an abbreviated right angle to said flexible printed wiring board.

[0010]

[Embodiment of the Invention]Five examples shown in drawing 1 - drawing 5 explain an embodiment of the invention. First, the 1st example is described using drawing 1. The two strip parts 1a and 1b which made approach mutually and have been arranged at abbreviated parallel are formed in the flexible printed wiring board 1 by piercing two fields. And the copper foil parts 1c and 1d are formed in the two strip parts 1a and 1b at the time of manufacture of a circuit pattern. In the case of this example, these copper foil parts 1c and 1d are formed apart from a circuit pattern, but you may make it be some copper foil parts of a circuit pattern depending on the case.

[0011]The electronic parts 2 with a lead of this example are crystal oscillators, they are one positions of the length direction of the two strip parts 1a and 1b, and the direction which abbreviated-intersects perpendicularly, and the two leads 2a and 2b are soldered to the lands 1e and 1f of the circuit pattern. The body part 2c of the electronic parts 2 with a lead is held between the two above-mentioned strip parts 1a and 1b. Therefore, when soldering the electronic parts 2 with a lead to the flexible printed wiring board 1, beforehand, the body part 2c is made to hold between the two strip parts 1a and 1b, and will be performed.

[0012]Thus, even if it prepares neither adhesives nor a special member in the case of this example, it is possible to make the electronic parts 2 with a lead hold into a predetermined posture. In the case of this example, since the copper foil parts 1c and 1d are formed in the two strip parts 1a and 1b, moderate hardness is given to those strip parts 1a and 1b, and suitable maintenance is possible. However, since both may not need to form such copper foil parts 1c and 1d depending on the case even if it forms them only in one strip part and, this invention is not limited to the composition

of such an example. In this example, although the length and width of the two strip parts 1a and 1b are similarly formed generally, even if there is no necessity in particular of making it such, the width of the strip part 1a is formed greatly and the circuit pattern is formed in the part, it is satisfactory at all. And these things are completely the same also in the 2nd which carries out the following – the 4th example.

[0013]Next, the 2nd example is described using drawing 2. This example cuts the strip part 1b in the 1st above-mentioned example in the abbreviated mid-position of the length direction, and two free-end 1b-1 and 1b-2 is formed. Other composition has not only carried out the graphic display of the copper foil parts 1c and 1d, and is completely the same as the case of the 1st example. Therefore, the same numerals are attached to the same member and the part.

[0014]And when it has composition like this example, it becomes easy to make it arrange between the strip part 1a and the divided strip part 1b. This is the same also for the case of the 3rd and 4th following example. In the case of this example, it is preferred to form the above copper foil parts 1d in the divided strip part 1b at least from a viewpoint of holding power. In the case of this example, the strip part 1b was divided, but when 1 f is formed in the land 1e and the reverse field, the direction which divided the strip part 1a becomes advantageous.

[0015]Next, the 3rd example is described using drawing 3. This example excises a part of length direction of the strip part 1b in the 1st above-mentioned example. Therefore, only one free-end 1b-3 is formed in the strip part 1b. Other composition has not only carried out the graphic display of the copper foil parts 1c and 1d, and since it is completely the same as the case of the 1st example, it has attached the same numerals to the same member and the part. And it is preferred to form the above copper foil parts 1d from a viewpoint of holding power at the strip part 1b also in the case of this example. When 1 f is formed in the land 1e and the reverse field, the direction which divided the strip part 1a becomes advantageous.

[0016]Next, the 4th example is described using drawing 4. This example excises a part of length direction of the strip part 1a in the 3rd above-mentioned example. And the excision position serves as a case of the strip part 1b the reverse side. Since other composition is completely the same as the case of the 3rd example, it has attached the same numerals to the same member and the part. And in the case of this example, it is preferred to form the above copper foil parts 1d in the two strip parts 1a and 1b from a viewpoint of holding power.

[0017]Finally, drawing 5 is used and the 5th example is described. four examples which the composition of this example described above -- Yoshinari -- it is that it is ****** and the two above strip parts 1a and 1b are not formed in the flexible printed wiring board 1. That is, the flexible printed wiring board 1 of this example has the rising part 1g which cut the three way type and of which bending was made possible, and forms the window part 1h in the approximately center part. After the leads 3a and 3b of the

electronic parts 3 with a lead of this example are bent by the abbreviated right angle, they are soldered to the two lands 1e and 1f, and are inserting the body part 3c in the above-mentioned window part 1h. Therefore, in the case of this example, since the body part 3c is inserted in the window part 1h, the leads 3a and 3b will be soldered, but also when it has such composition, it is possible to make the electronic parts 3 with a lead hold into a predetermined posture, without preparing adhesives and a special member.

[0018]

[Effect of the Invention]As mentioned above, according to this invention, use adhesives or electronic parts with a lead. Since it can attach easily to a flexible printed wiring board and a predetermined posture can moreover be made to hold to a flexible printed wiring board, without using a special member up and carrying out it, The flexible printed wiring board provided with very low cost electronic parts with a lead can be manufactured.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a perspective view showing the 1st example.

[Drawing 2]It is a perspective view showing the 2nd example.

[Drawing 3]It is a perspective view showing the 3rd example.

[Drawing 4]It is a perspective view showing the 4th example.

[Drawing 5]It is a perspective view showing the 5th example.

[Description of Notations]

1 Flexible printed wiring board

1a and 1b Strip part

1a-1, 1b-1 - 1b-3 Free end

1c and 1d Copper foil part

1e and 1f Land

1 g Rising part

1 h Window part

2 and 3 Electronic parts with a lead

2a, 2b, and 3a and 3b Lead

2c and 3c Body part

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PROBLEM TO BE SOLVED: To provide a flexible printed
wiring board provided with an electronic component with leads which is so
installed as to be kept in a specified position without using an adhesive or
special member.
SOLUTION: The flexible printed wiring board 1 is formed with
two belt-like parts 1a1b which have copper foil sections 1c1d formed when forming
a circuit pattern. The electronic component 2 with leads has two leads 2a2b
soldered to lands 1e1f of the circuit pattern and has a main body 2c held between
the two belt-like parts 1a1b. When soldering the electronic component 2 with
leads to the flexible printed wiring board 1the work is done with the main body
part 2c being held in advance between the two belt-like parts
1a1b.

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[Claim
1]Form two strip parts which pierced some flexible printed wiring boards and have
been arranged to abbreviated parallel in an adjacent positionand electronic parts
with a leadA flexible printed wiring board provided with electronic parts with a
leadwherein the lead is soldered to said flexible printed wiring board in one
position of the length direction of said two strip partsand a direction which
abbreviated-intersects perpendicularly and a body part is held between said two
strip parts.
[Claim 2]A flexible printed wiring board provided with the
electronic parts with a lead according to claim 1wherein width is widely formed

from a strip part of a direction which has a strip part of a direction which is in a position far from said lead among said two strip parts in a near position.
[Claim 3]A flexible printed wiring board provided with the electronic parts with a lead according to claim 1 or 2wherein at least one side of said two strip parts is cut by a position of the length direction and one or the two free end are formed.
[Claim 4]A flexible printed wiring board provided with the electronic parts with a lead according to any one of claims 1 to 3wherein at least one side of said two strip parts has a trunk foil in accordance with the length direction.
[Claim 5]From a plate surface of a flexible printed wiring boarda part which forms a window part is bendable and electronic parts with a leadA flexible printed wiring board provided with electronic parts with a lead having soldered a lead which makes said part a bent condition and is bent by said window part in a body part at through and an abbreviated right angle to said flexible printed wiring board.
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<HR><B>DETAILED DESCRIPTION</B><HR><SDO DEJ><TXF FR=0002 HE=100 WI=080 LX=0200 LY=1800>[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the flexible printed wiring board furnished with electronic parts with a leadsuch as a crystal oscillator.
[0002]
[Description of the Prior Art]When soldering electronic parts to a flexible printed wiring board and the electronic parts are chipsSince the body part of the electronic parts will be in the state where it carried out approximately close to the flexible printed wiring boarddo not produce a problem in particularbut in being electronic parts with a leadOnly by soldering the lead to a flexible printed wiring boardSince the state where the body part was close to the flexible printed wiring board cannot be maintainedif after soldering is not dealt with carefullythe mounting posture over a flexible printed wiring board may changeor a lead may be damaged. Thenafter soldering a leadhe was trying to paste up a body part on a flexible printed wiring board with adhesives from the formerin order to keep such a situation from arising. <TXF FR=0003 HE=250 WI=080 LX=1100 LY=0300>Enabling it to maintain a predetermined mounting posture by other members is also thought of as shown in Drawing 1 of JP4-32778Y.
[0003]
[Problem(s) to be Solved by the Invention]Howeverwhen pasting up the body part of electronic parts with a lead on a flexible printed wiring board with adhesivesThere is if a body part must be positionedit is necessary to attach adhesives each timeand it must not necessarily be able to say that it is advantageous on a man day and quantity of adhesives must be made regularitya problem that it must be made for adhesives not to have to flow until adhesives harden thoroughly. When adopting what is indicated in Drawing 1 of the above-mentioned gazetteit will become very [in cost] disadvantageous from a separate member being prepared or the member being soldered to a flexible printed wiring board.
[0004]this invention is made in order to solve such a problemand it comes out. The purpose is to provide the flexible printed wiring board which attached it as holds and acquired the predetermined posturewithout using adhesives for ********** or preparing a special member.

[0005]
[Means for Solving the Problem]In order to attain the above-mentioned purposethis invention forms two strip parts which pierced some flexible printed wiring boards and have been arranged to abbreviated parallel in an adjacent positionand electronic parts with a leadThe lead is soldered to said flexible printed wiring board in one position of the length direction of said two strip partsand a direction which abbreviated-intersects perpendicularlyand a body part is held between said two strip parts.
[0006]In that caseif width is widely formed from a strip part of a direction which has a strip part of a direction which is in a position far from said lead among said two strip parts in a near positionit will become possible to make the wide strip part into a circuit pattern formation part.
[0007]If at least one side of said two strip parts is cut by a position of the length direction and one or the two free end are formedattachment of a body part of electronic parts with a lead will become easy.
[0008]If it is made for at least one side of said two strip parts to have a trunk foil in accordance with the length directiona body part of electronic parts with a lead will come to be firmly held between two strip parts.
[0009]In order to attain the above-mentioned purposethis inventionFrom a plate surface of a flexible printed wiring boardunlike each of above-mentioned compositiona part which forms a window part is bendableand electronic parts with a leadIt may be made to have soldered a lead which makes said part a bent condition and is bent by said window part in a body part at through and an abbreviated right angle to said flexible printed wiring board.
<DP N=0003><TXF FR=0001 HE=250 WI=080 LX=0200 LY=0300>[0010]
[Embodiment of the Invention]Five examples shown in <A HREF="JP-A-2001-339136.files/000003.gif">drawing 1 </A>- <A HREF="JP-A-2001-339136.files/000007.gif">drawing 5 </A>explain an embodiment of

the invention. Firstthe 1st example is described using <A HREF="JP-A-2001-339136.files/000003.gif">drawing 1</A>. The two strip parts 1a and 1b which made approach mutually and have been arranged at abbreviated parallel are formed in the flexible printed wiring board 1 by piercing two fields. And the copper foil parts 1c and 1d are formed in the two strip parts 1a and 1b at the time of manufacture of a circuit pattern. In the case of this examplethese copper foil parts 1c and 1d are formed apart from a circuit patternbut you may make it be some copper foil parts of a circuit pattern depending on the case.
[0011]The electronic parts 2 with a lead of this example are crystal oscillatorsthey are one positions of the length direction of the two strip parts 1a and 1band the direction which abbreviated-intersects perpendicularlyand the two leads 2a and 2b are soldered to the lands 1e and 1f of the circuit pattern. The body part 2c of the electronic parts 2 with a lead is held between the two above-mentioned strip parts 1a and 1b. Thereforewhen soldering the electronic parts 2 with a lead to the flexible printed wiring board 1beforehandthe body part 2c is made to hold between the two strip parts 1a and 1band will be performed.
[0012]Thuseven if it prepares neither adhesives nor a special member in the case of this exampleit is possible to make the electronic parts 2 with a lead hold into a predetermined posture. In the case of this examplesince the copper foil parts 1c and 1d are formed in the two strip parts 1a and 1bmoderate hardness is given to those strip parts 1a and 1band suitable maintenance is possible. Howeversince both may not need to form such copper foil parts 1c and 1d depending on the case even if it forms them only in one strip part andthis invention is not limited to the composition of such an example. In this examplealthough the length and width of the two strip parts 1a and 1b are similarly formed generallyeven if there is no necessity in particular of making it suchthe width of the strip part 1a is formed greatly and the circuit pattern is formed in the partit is satisfactory at all. And these things are completely the same also in the 2nd which carries out the following - the 4th example.
[0013]Nextthe 2nd example is described using <A HREF="JP-A-2001-339136.files/000004.gif">drawing 2</A>. This example cuts the strip part 1b in the 1st above-mentioned example in the abbreviated mid-position of the length directionand two free-end 1b-1 and 1b-2 is formed. Other composition has not only carried out the graphic display of the copper foil parts 1c and 1dand is completely the same as the case of the 1st example. Thereforethe same numerals are attached to the same member and the part.
[0014]And when it has composition like this exampleit becomes easy to make it arrange between the strip part 1a and the divided strip part 1b. This is the same also for the case of the 3rd and 4th following example. In the case of this exampleit is <TXF FR=0002 HE=250 WI=080 LX=1100 LY=0300>preferred to form the above copper foil parts 1d in the divided strip part 1b at least from a viewpoint of holding power. In the case of this examplethe strip part 1b was dividedbut when 1 f is formed in the land 1e and the reverse fieldthe direction which divided the strip part 1a becomes advantageous.
[0015]Nextthe 3rd example is described using <A HREF="JP-A-2001-339136.files/000005.gif">drawing 3</A>. This example excises a part of length direction of the strip part 1b in the 1st above-mentioned example. Thereforeonly one free-end 1b-3 is formed in the strip part 1b. Other composition has not only carried out the graphic display of the copper foil parts 1c and 1dand since it is completely the same as the case of the 1st exampleit has attached the same numerals to the same member and the part. And it is preferred to form the above copper foil parts 1d from a viewpoint of holding power at the strip part 1b also in the case of this example. When 1 f is formed in the land 1e and the reverse fieldthe direction which divided the strip part 1a becomes advantageous.
[0016]Nextthe 4th example is described using <A HREF="JP-A-2001-339136.files/000006.gif">drawing 4</A>. This example excises a part of length direction of the strip part 1a in the 3rd above-mentioned example. And the excision position serves as a case of the strip part 1b the reverse side. Since other composition is completely the same as the case of the 3rd exampleit has attached the same numerals to the same member and the part. And in the case of this exampleit is preferred to form the above copper foil parts 1d in the two strip parts 1a and 1b from a viewpoint of holding power.
[0017]Finally<A HREF="JP-A-2001-339136.files/000007.gif">drawing 5 </A>is used and the 5th example is described. four examples which the composition of this example described above -- Yoshinari -- it is that it is ****** and the two above strip parts 1a and 1b are not formed in the flexible printed wiring board 1. That isthe flexible printed wiring board 1 of this example has the rising part 1g which cut the three way type and of which bending was made possibleand forms the window part 1h in the approximately center part. After the leads 3a and 3b of the

electronic parts 3 with a lead of this example are bent by the abbreviated right anglethey are soldered to the two lands 1e and 1fand are inserting the body part 3c in the above-mentioned window part 1h. Thereforein the case of this examplesince the body part 3c is inserted in the window part 1hthe leads 3a and 3b will be solderedbut also when it has such compositionit is possible to make the electronic parts 3 with a lead hold into a predetermined posturewithout preparing adhesives and a special member.
[0018]
[Effect of the Invention]As mentioned aboveaccording to this inventionuse adhesives or electronic parts with a lead. Since it can attach easily to a flexible printed wiring board and a predetermined posture can moreover be made to hold to a flexible printed wiring boardwithout using a special member up and carrying out itThe flexible printed wiring board provided with very low cost electronic parts with a lead can be <DP N=0004><TXF FR=0001 HE=005 WI=080 LX=0200 LY=0300>manufactured.
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<HR><B>DESCRIPTION OF DRAWINGS</B><HR><SDO EDJ><TXF FR=0002 HE=040 WI=080 LX=0200 LY=0350>[Brief Description of the Drawings]
<A HREF="JP-A-2001-339136.files/000003.gif">[Drawing 1]</A>It is a perspective view showing the 1st example.
<A HREF="JP-A-2001-339136.files/000004.gif">[Drawing 2]</A>It is a perspective view showing the 2nd example.
<A HREF="JP-A-2001-339136.files/000005.gif">[Drawing 3]</A>It is a perspective view showing the 3rd example.
<A HREF="JP-A-2001-339136.files/000006.gif">[Drawing 4]</A>It is a perspective view showing the 4th example.
<A HREF="JP-A-2001-339136.files/000007.gif">[Drawing 5]</A>It is a perspective view showing the 5th example.
[Description of Notations]
1 Flexible printed wiring board
<TXF FR=0003 HE=045 WI=080 LX=1100 LY=0300>1a and 1b Strip part
1a-11b-1 - 1b-3 Free end
1c and 1d Copper foil part
1e and 1f Land
1 g Rising part
1 h Window part
2 and 3 Electronic parts with a lead
2a2band 3a and 3b Lead
2c and 3c Body part
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